The Bulletin
OF THE
South Indian Medical Union.

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Programme.

MARCH 1931.

Meetings held at

32, Broadway, Madras.

Monday 9th, 6-30 p.m.

FOCAL INFECTIONS IN OTO-RHINO-LARYNGOLOGY

BY

Dr. M. Sanjiva Rao, M.B., B.S.,
Hony. Assistant Surgeon, E N.T. Dept,
General Hospital, Madras.

Monday 16th, 6-30 p.m.

GOVERNING BODY MEETING.

Monday 23rd, 6-30 p.m.

ON CERTAIN DRUGS USED IN HEART CASES

BY

Dr. T. Krishna Menon, M.B.,
Hony. Physician,
General Hospital, Madras.

Members of the Union may exhibit any interesting case for demonstration at the meetings.

* * *

All members of the Medical profession and medical students are cordially invited.

South Indian Medical Union, Madras.

BULLETIN

OF THE

SOUTH INDIAN MEDICAL UNION.

FEBRUARY, 1931

General Notes.

As anticipated, the Finance Member has presented a deficit budget and it is up to all people interested in nation-building departments, especially Medical relief, to devise measures as to how to get the best value for the money and the maximum benefits with the minimum expenditure.

* * *

One thing we notice is that irrespective of a deficit budget more money is available for pay and allowances. We read in the papers not long back about the creation of another cadre in the Medical department, *viz*, the X-ray cadre with its inevitable Civil Surgeoncies and increased emoluments.

* * *

Whilst a high percentage of the expenses of the Medical department is spent on pay and allowances, it behoves us to consider means whereby this paid agency could be reduced and advantage taken of non-official workers to carry on the work in the hospitals.

* * *

There is no dearth of willing hands to give their services in an honorary capacity in the Medical institutions. Such men could be employed in greater numbers and utilised to release a large number of paid men in, at least, the City and Headquarter hospitals.

* * *

We have heard that the Medical Education Committee had recommended a five-year course in the Medical schools. There is also a persistent agitation by the L. M. Ps. to improve their courses and bring them on a par with the University graduates. Other Governments have introduced this scheme. Though the Government has accepted the recommendations of the Medical Education Committee, so far nothing seems to have been done in this Presidency. With the release of a large sum effected by the closure of the Coimbatore Medical School and with a larger employment of part-time officers which, following the English system, could man these teaching institutions there should be no difficulty—financial or otherwise—in introducing this change here.

We do know that Surgeon-General Sprawson is keen on improving the school standards and with such an experienced educationist and organiser at the helm of medical affairs, we hope that the five-year standard will be an accomplished fact by the time the new terms begin.

* * *

The Government of India seems to have decided to embark on the General Medical Council scheme. If we can gauge the feeling of the medical profession correctly, there is considerable dissatisfaction in the proposed constitution of the Medical Council. The preponderance of the official classes and the absence of facilities for a direct representation of the Independent Medical Profession are much resented. In England a persistent agitation is going on to give the Independent Medical Profession a larger number of seats by direct election. We hope that in the proposed Council provision will be made for adequate representation of members of the Independent Medical Profession, without which, we have to warn the Government, the proposed Council will not command the necessary influence and a large number of medical practitioners would not care to be on the register.

* * *

In one of our previous issues we had to commend on the relations between the Police and the Red Cross. We never expected at that time that the disregard of Red Cross conventions by the Police would creep into this city. The recent happenings here have brought with it complaints of not only want of help to the injured by the Police authorities but also active obstruction and, in some cases, bodily injury to those who were employed in ambulance work. The police raid on the Congress hospital and the arrest of the workers is reminescent of *uncivilized* wasfare and deserve severe condemnation. We trust that the Inspector-General of Police would provide for the education of his subordinates in the elementary conventions of Red Cross and prevent such abuses in future.

* * *

Anyhow, out of evil cometh good. With this attitude of the Government forces it is no wonder that the injured do not believe in the care they would get from Government Hospitals. The tangible result has been the opening of a private Hospital in the city for the treatment of the injured. We hope that very soon the necessity for such an institution will cease but that the institution will continue to be of general benefit free from the trammels of Government red-tape. We congratulate Dr. U. Rama Rao on his initiative and under his guidance can hope for a great future for the institution.

Post-Graduate Education.

We are glad to note from the inaugural address of the President of the Madras Medical (Service) Association that our brethren in State employ are beginning to perceive, though somewhat hazily, that there are other problems besides their pay and prospects, rank and reward, to be faced by the profession as a whole in Madras. Men in paid services claimed that they were the cream of the profession in Madras and made it appear that they were fully competent in all branches of medicine. As such, they probably felt that they had little to learn from others. It required, so it is broadly rumoured, great persuasion from a Surgeon-General to induce some of them to go abroad to learn some medicine if possible. We are now pleasantly surprised to hear from the President of their association that they could learn much from a travel in Europe and among other things that post graduate education is necessary for a medical man to keep himself a useful member of the profession. A good part of the inaugural address is devoted to the necessity of organising such education in Madras. When the septennial examinations of the assistant surgeons were abolished some years ago, the Government substituted post-graduate courses in the Madras Medical College and the hospitals attached to it. We have reasons to believe that these courses were not popular with the members of the Madras Service, as they felt that they derived little benefit from them. Probably the present staff feel that they are more competent and so advise the humbler men in *service* to learn at their feet.

Medical men engaged in practice, shut out as they are practically from all association with hospitals and schools, have been keenly feeling the want of facilities for further equiping themselves with recent knowledge. Nearly five years ago the South Indian Medical Union voiced this feeling in a resolution which requested the Government to arrange for a real post-graduate clinic in Madras staffed with competent teachers recruited from outside, if necessary. This desire of the Union was considered in certain quarters as

an indication of the inferior equipment of the members of the independent profession. We are therefore gratified to find our position now supported by the service association.

Post-graduate or, to be short, *graduate* education can be achieved in two ways:

(1) It can be undertaken by an institution equipped with method and organisation, and with a competent staff of men who have genuinely specialised in their departments, who are learned in the ancient and current literature of their special subjects, and who have practised their speciality successfully for over a decade, or

(2) It can be undertaken by medical societies. These can arrange for lectures, single or in series, to be delivered by their members or by eminent outsiders. They can form reading circles from among members, various groups for various branches of medicine. They can provide facilities for their members by establishing small libraries with the necessary literature. Groups may be established for pursuing statistical studies. These societies can stimulate and encourage group research and co-ordination of work. Following these several activities, medical societies should undertake to provide for the members, facilities for publication of scientific and clinical papers, resume of existing literature and results of individual or team-work.

Graduate education by organised clinics.—Two classes of work could be accomplished in these institutions. These can provide for Refresher courses and extension courses:

(1) *Refresher course.*—All medical men who are active in the profession would be very grateful for a periodical brushing up of old knowledge. But the teacher who can engage in this burnishing process should be one who from experience or intuition, could group out the essentials from the details. He should be gifted with lucidity of thought and expression, that he might put things arrestingly to the seekers of knowledge who could ill afford to be bored by a repetition of under-graduate lectures.

(2) *Extension course.*—We mean by this expression, a course of instruction which enables the student to get an insight into the recent trend in medicine and newer knowledge, the gaining of new facts, or the giving up of obsolete ideas in medicine. This, again, requires teachers who are also investigators, and who have put new ideas to the proof in the wards or laboratories. Those who take all things on trust and are perfectly content to repeat them parrot-like in the class-room may be tolerated in the under-graduate scheme. But they are hardly worth the attention of qualified men who have come across difficulties in the actual practice of their profession.

We are constrained to confer that we have not among us the right type of men who could undertake these very useful but difficult duties. There may be less than a handful with sufficient experience and skill to venture on this task. But the great majority of our teachers is to say the least, inexperienced for the work. It is no discredit to any one. Conditions that have prevailed and not the individuals, are responsible for this unsatisfactory position. We have not the necessary atmosphere for the uprise of a number of enthusiastic teachers. Friendly rivalry or willing co operation among workers similarly engaged is necessary. But neither is available here. Till recently there has been only one institution of the university standard and a few admittedly inferior schools. The students were compelled to join the only college and attend courses irres-

pective of the efficiency of the institution or the capacity of the teacher. In this sheltered atmosphere teachers never reach to their height. Further, *service* exigencies and various other considerations led to frequent shifting of teachers and the appointment of inexperienced ones. And by virtue of seniority in service or of being superintendents of particular hospitals these teachers were considered specialists in the particular departments.

What we need immediately is a large number of schools where teachers are equals and not one set of schools staffed with official superiors and another set with subordinates. When such schools come into being there would be a number of teachers who would rival each other in establishing a reputation for work and teaching. Out of these groups of men would be available those who could undertake graduate education successfully.

The existing need for graduate medical education offers strong inducement to try short-cuts. A clinic may be established under official aegis and the class rooms filled with men in the subordinate ranks of service, using compulsion if necessary. This would only lead to further wastage of public funds. Or those who have a voice in the ordering of the University may influence that body to launch on university extension lectures and other graduate teaching. The university might readily agree to this, since its vanity is tickled thereby, and it may deceive itself in the belief that it is keeping abreast of university activities elsewhere. But no real usefulness would accrue to the profession. We find at present that common or garden classroom or association lectures are glorified into university lectures. In our opinion, these impatient substitutes, instead of helping us, would considerably retard progress and indefinitely put off the beginnings of honest and genuine graduate work. In the absence of competent men, to launch on a grandiose organisation of graduate education would leave on the public mind an impression that a few men in friendly mutual admiration are out to advertise themselves, pressing to their aid the advantages of their official appointments and the influence they may wield in educational bodies.

There are some among the independent profession who fear that this anxiety on the part of some people to establish post-graduate clinics in Madras arises out of a desire for self-aggrandisement. Those who have this fear are prepared to encourage the formation of a graduate clinic, provided a few members of the independent profession are also drafted on to the staff of such organisations. We entirely disagree with our friends in this view. In medical education, under-graduate and graduate, it is not the interests of an influential few that should matter, be they in service or out of it. It is the *interests of the public* that seek medical relief at the hands of practitioners *that should be supreme.* Medical men desire to equip themselves better that they might be more useful to their patients. View it from the higher moral plane, or view it from the plane of self-interest, the real incentive for improvement is the welfare of the patient. In this ambition to equip themselves better, it behoves the would-be leaders of the profession to provide them with facilities for learning at a minimum expense of time and labour. Medical men would be grateful for that. But to induce them by specious arguments to waste their time and money on pinchbeck imitations would not certainly earn their blessing.

Conditions are not propititious and facilities do not exist. But the need for graduate education is none the less insistent. We cannot therefore sit idle. We should plan out some methods by

which we could work up to hasten the coming of favourable conditions. We consider that the State should encourage men to go abroad, not for obtaining registrable qualifications, to deserve civil assistant surgeoncies or civil surgeoncies. But medical men who have obtained the highest available academic qualifications and who possess considerable professional experience to their credit should be selected to attend various clinics in their special branches of medicine. Some may be sent to Europe, some to America and others to Japan and even China. Pending the return of these men, and without the aid of a fictitious organisation or school enthusiastic teachers in our midst should gather round them young workers and as their fame and reputation spreads, practitioners would be attracted to them. It would then be time to think of providing facilities for the teachers in the shape of formal schools. Along with this, medical societies that now exist and those which we hope would soon be formed in greater numbers should exploit to their utmost the various possibilities of further learning which have been already mentioned.

Lest we should be misunderstood, we shall re-state our faith. We are not against the organisation of graduate medical education. On the contrary we are very keen about it. But we are definitely against spurious imitations. We desire that we should frankly recognise our limitations and devise means to remove them. We believe that exaggerated activities without collateral efforts to remove the cramping bounds would lead to exhaustion and thus postpone achievement.

Union Notes.

The President and the members of the Union were *at home* on the 2nd instant, to meet Dr. T. Krishna Menon to felicitate him on the honour that was conferred on him this new year and to show their appreciation of the very valuable services that he has rendered to the Union during his tenure of office as its General Secretary for over two years. His popularity with the profession and the public was evidenced by the ready response of the large number of guests who met that evening. Dr. C. R. Krishnaswami congratulated Dr. Krishna Menon on the well merited honour and the Government on its discernment. He expressed the appreciation and sincere thanks of the Union for his willing services. He rightly stressed that the gratitude of his patients is the highest honour that a medical man seeks. Dr. Krishna Menon acknowledged the Union's appreciation in thankful terms.

Dr. S. Rangachari in welcoming and thanking the guests referred to some of the difficulties that beset the path of the practitioner in life. He exhorted the medical men to join the Union in large numbers that they might enjoy the benefits of mutual association and concerted activities. He cautioned the Government about the inadvisability of frittering away its limited funds on Schools of Indian Medicine. He referred to the honorary system and made it plain that medical men would be willing to do their bit in the amelioration of disease and sickness and that it was up to the Government how they utilised their services. Dewan Bahadur R. N. Arokiasami Mudaliar, M.L.C., replied on behalf of the guests. He twitted Dr. Rangachari on his reference to the school of Indian Medicine and said that it was out of sheer desperation that the Government started that school, since the medical department would have nothing to do with the indigenous methods of medicine. Personally he would have preferred some chairs in the Madras Medical College to deal with ancient learning so that medical graduates could investigate ancient

truths and incorporate useful knowledge into modern learning. He said that no country could look after the health of its population with a fully paid agency. He pointed out that England started with an unpaid agency and long after, added to it some paid agency. In India we started with a fully paid service and are now faced with the difficulty of finding sufficient money to enlarge the paid agency adequately. According to him the best solution would be a happy combination of paid and honorary agencies according to requirements. Those present spent an enjoyable evening with conversation, music and refreshments.

Indian Ambulance Society (Bombay).

Resolutions passed unanimously at a meeting of the Promoters of the Indian Ambulance Society, held under the auspices of the Bombay Medical Union, on 16th October 1930, at Alice Building, Hornby Road, Bombay, Dr. G. V. Deshmukh, M.D. (Lond.), F.R.C.S. (Eng.), L.M. & S. (Bom.), presiding :—

(1) This Meeting of Medical men and laymen and women interested in the question of establishing an Indian Ambulance Society held under the auspices of the Bombay Medical Union resolves that the Indian Ambulance Society be and is hereby established.

(2) The Meeting further resolves that a Provisional Committee, with power to co-opt, be formed of the following members to draft a Constitution for the Society and to submit the same at a meeting of the present promoters to be held within six weeks from to-day :

Dr. K. K. Dadachanji, Dr. (Mrs.) Dossibai J. R. Dadabhoy, M.D., Dr. Sir Nusserwanji Choksy, Kt., Drs. Jivraj N. Mehta, Dinshaw M. Gagrat, R. C. Lam, Sorab J. Popat, D. D. Sathaye, M. V. Parulker, Gulamhusen V. Patel, S. R. Sams, B. P. Shukla, and C. R. Athavle, and Messrs Dinshaw D. Mahwa, M R. Patel, E. F. Kharas, A. B. Homavazir, and K. B. Godrez.

(3) This Meeting authorises the said Provisional Committee to accept in the name of the Society all gifts, subscriptions, donations, etc., from the public offered for furthering the objects of the Society, and to start work as early as possible, during the intervening period, prior to the adoption of a permanent Constitution for the Society.

(4) This Meeting appeals to the Public and the Press to support this self-help and humanitarian movement, and authorises the President to forward the foregoing resolutions to the sympathisers with the objects of the Society.

Correspondence.

THE ALL-INDIA MEDICAL COUNCIL.

The Place of the Independent Medical Profession.

If all went well, the year of grace 1932 would witness the opening of the long-wished for Medical Council for All India. The Standing Finance Committee of the Legislative Assembly the other day approved of the proposal to include in the next budget, provision for Rs. 13,000 for two months' work of the Council during the official year 1931-32. From the meagre explanation given by the Government to the Finance Committee, it is understood that the Council would consist of 27 or 28 members. The President would in the first instance be nominated by the Governor-General in Council. It is presumed that the next President would be elected by the Council from among the members themselves. Be-

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sides the President, the Governor-General in Council has the power to nominate three other representatives. In the absence of any specific provision to the contrary, these members would naturally be drawn from the official class. If, however, they happen to be non-officials, they are sure to be led by the noose strings of officialdom. It is said, eight would represent the Provincial Governments. The head of the Medical Department in each Province would be the deciding authority in this case and the I.M.S. Officers therefore stand the best chance of being returned to the Council through this door. They will form another official block. Again, eight would represent the medical faculties It is a well-known fact that the official element preponderates in the several medical faculties and the independent medical profession is sparsely represented in them. Ninety per cent of these representatives therefore would be officials. Lastly, seven or eight would represent the medical graduates in the several provinces or the Provincial Committees which might be established in the Provinces in connection with the work of the Council. As this group also includes mostly medical graduates who are officials, it might fairly be expected that 50 per cent of the seats would go to them. Thus, in a council of 27 or 28 not more than seven or eight would be non-officials. So, the Council would be completely official ridden with very little popular element in it.

Further, the much despised L.M.Ps. have been left altogether in the lurch. Already the L.M.Ps. have demanded in unequivocal terms equal status and equal privileges with the rest of their brethren. The Bombay Government have acceded to their demands and have since raised their course to five years. The Committee of Medical Education appointed by the Madras Government have recommended the raising of the status and qualification of the L.M.Ps. I dare say the other Provincial Governments will follow suit. The ban against the L.M.Ps. must be lifted and they must have due representation in the proposed All-India Medical Council. A deputation by the All-India Medical Licentiate's Association will wait on Col. Megaw, the Director-General of Indian Medical Services shortly, and possessing as he does a soft corner in his heart for the medical licentiates, he will, I trust, redress this grave wrong and ameliorate the hard lot of the L.M.Ps.

We have been told that by the establishment of a medical council, we are going to have " Medical Swaraj." If this is the kind of Swaraj we expect, then it is better we summarily reject it. The independent medical profession throughout the country must bestir themselves and see that a purely democratic medical council is set up or none at all.

U. Rama Rao,
Madras.

Drugs Enquiry Committee.

There are certain features in regard to the Indian Drugs Enquiry Committee which is now holding its sittings in Calcutta to which I should like to draw attention.

Whilst the desirability of such an enquiry will not be questioned considerable apprehension prevails amongst the members of the independent section of the Indian medical profession. Somehow we feel that the findings of the committee will be used with the ulterior purpose of prejudicing the position of the infant drug industry in the country. It would have been much better in the first place to have helped this industry by means of bounties or tariffs as in the case of steel and cotton industries, or even encourag-

ing the use of these products in Government hospitals and institutions and thus enabling it to find its feet in competition with foreign medical products, of which India is now the dumping ground. As it is the holding of this enquiry is likely to result in unfairly branding Indian products as inferior. Colour is lent to this apprehension by the fact that although it was as far back as 1927, that the resolution for the appointment of such a committee was passed by the Council of State, it was not given effective to until only a month or two ago, when it was evident that a boycott of British medicines had been instituted and was gaining way. It is strange that for 150 years of British rule no much solicitude has been evidenced for the control of drugs in India. In 1929 out of Rs. 2,01,84,000 worth of drugs and medicines imported into India some Rs. 88,99,000 worth was imported from the United Kingdom where it should be noted, the Food and Drugs Act in existence there does not apply to drugs or foods exported to India from the United Kingdom. We should have thought that in all these years if there had been any real feeling for the people of India some measures would have been instituted for the control of foods and drugs exported to India from the United Kingdom.

The time for such an enquiry as the Chopra Committee seems particularly inopportune, considering the terrible state of the country at the moment, the fact that the legislatures are denuded of members who could justifiably be regarded as representatives of the people and when rule is by ordinance.

There is also the question of funds, for it is improbable that in the present parlous condition of the finances of Government when even educational and other grants such as those for medical relief are being withdrawn, any effect could be given to the findings of the committee however good its recommendations might be. This is not the time to waste energy on mere academic issues. India has born the burden of several enquiries and commissions of this nature and we do not know what the drain in money has been on the poor rate payers. The present committee will entail a great deal of further expenditure and there is no warrant that in the present state of finances its recommendations would be given effect to standardisation of drugs and medicines would require the establishment of several test houses and elaborate laboratories and a large and expensive staff. It is uncertain that there would be no difficulty (?) in finding suitable Indians for appointments in the superior staff, in which case the benefit of such appointments would accure to the I.M.S. as additional reserve posts for that service. India has no wish to become the dumping ground of British unemployed in addition to being the dumping ground of many lakhs worth of spurious British drugs and medicines.

In conclusion I would ask that these remarks should not be misunderstood. The independent medical profession is not averse to the control of standardisation of drugs in the country, a fact which has been indicated on several occasions and lately through the Indian Medical Association, but it is certain that there is good ground for the above apprehension and the recent experience of Government's manoeuvres in regard to the Central Medical Research Institute and the reservation of a large proportion of the posts for the I.M.S. therein do not serve to infuse confidence. In any case the times are out of joint for the holding of such an enquiry as the Indian Drugs Enquiry Committee is now conducting.

K. S. RAY, M.A., B.SC.,
M.B., CH. B. (Edin.),
6 A, Corporation Street,
Calcutta.

BULLETIN

OF THE

SOUTH INDIAN MEDICAL UNION.

FEBRUARY, 1931.

History of Surgery.*

By Major V. Mahadevan,

F.R.C.S., M.R.C.P. (Edin.),

Surgeon, Royapuram Hospital, Lecturer in Surgery, Royapuram Medical School.

The subject of this evening is a very vast one. One cannot trace the developments of science like this without going into the development of the different civilisations, culture, knowledge of the different countries and nations of the world. My endeavour to-night will be to present before you as briefly as possible the growth of this science from its early beginnings. Surgery, I might as well tell you, is one of the most scientific and efficacious form of treatment now known to us. By the end of this lecture it might seem to many that the latter day surgeons have developed the science to perfection as we see it to-day. But the ancients with their limitations in sister sciences and other great difficulties did a great deal towards its progress. Present day surgery certainly owes a very great debt to them. The present scientific surgery is not western or eastern nor northern or southern. Every nation of the world have contributed to it and the ancient Hindus not a little. It is a very difficult task to fix an age for the beginning of this science. It must have begun when the first child of this world fell down and cut himself and the protective instinct of the first mother of this world initiated treatment for it. The birth of surgery is surrounded by an atmosphere of love—the love of a mother. This is true of medicine too and hence the loving regard bestowed on the doctors of the healing by people even in the present day. No written records are handed over to us of the observations of these primeval parents. That Surgery did advance even in those days is seen from the written records of early operations left to us in the terphined skulls in pre-historic burial places of different countries.

Coming to the periods of which there are some records the surgery of the Egyptians and Hindus come first under survey. The records of Egyptian surgery are found in three forms: (1) Tablets of stone on monuments, (2) Papyri and (3) Models of deformed and diseased organs in silver and gold given as votive offerings to their gods. In addition, the surgical instruments that have been discovered also show the surgery was of some importance in old Egypt. The dead body was considered to be sacred. No dissection was permitted and surgery did not advance very much.

The physicians and surgeons of Egypt were divided into grades, first according to the amount of learning and secondly according to their specialities. They all belonged to priesthood. They were allowed to learn certain portions of hermetic books only. Some of these surgeons are sent to the army and formed military surgeons. Surgery was divided into non-operative surgery and operative surgery. Treatment of fractures was poor as seen by ununited and malunited fractures in mummies. Artificial teeth in mummies show that dentistry was practised. Operations were divided both into those of election and those of necessity. They also practised lithotomy for stone in the bladder. Egypt was, as it still is, a hot bed for eye diseases and they were clever ophthalmic surgeons.

* Read at a meeting of the Royapuram Medical Students' Union.

The next surgery that comes under review is the one of our own ancients. Our ancient surgery is of a contrast to that of the Egyptians. The most important work that is being handed over to us is that of Sushruta. The revelation to Sushruta is supposed to have come from the divine physician, Dhanvantari who was born on earth as a prince of Benares. From this it can be understood that the surgery found in the works must have been in existence for a long time before him, *i.e.*, before the priests became unreasonable and aggressively predominant. That is long before the advent of Buddhism. His work may be considered to be a great compilation of the practices of his time with good deal of his own experience. In this work surgery is given the first and an honoured place. This is what he says about surgery. " Surgery is the first and highest division of the healing art least liable to fallacy, pure in itself, perpetual in its applicability, the worthy produce of heaven and the sure source of fame on earth." In spite of this great praise for surgery Sushruta lays great stress on the study of medicine by a surgeon. To be a good surgeon one should first be a good physician is the cry even to-day. Mysticism had its place in Hindu surgery but not to the same extent as in other ancient surgery or in the surgery of middle ages.

In the description of opening an abscess Sushruta says " Then on a good day having a good lunar influence and the auspicious influence of stars after invoking the blessings of brahmins and medical men and propitiating the sacred fire with honey, rice, and water let the patient be seated, who has taken very little food, offer sacrifices and ablutions with his face towards the east. The surgeon should stand with his face towards him and plunge his instrument after the proper incision until matter comes out and withdraw it avoiding vital parts, such as vessels, muscles, articulation bones and arteries. Mysticism of this mild characters is even present to-day. Mentioning of vessels and arteries separately show that he knew the existence of veins and arteries at least. As regards instruments various forms of forceps are described to take out foreign bodies from wounds. Wars had a great influence in surgery in those days. Hindus had regularly appointed surgeons in the army. The duties of these surgeons are put down as seeing to the food, water and places of encampment and examine them carefully for they may be poisoned by the enemy.

If he finds poison he must remove it and save the army from death and destruction. He may learn how to do this from the chapter on poisons. His tent shall be near the King's tent and he will have to be always ready at hand. There shall be a flag over his tent that the sick and wounded may find him quickly and easily.

Though I started with the opening of an abscess one should not think that Hindu surgery was limited to that. Opening of the abdomen, suturing intestines are described. Caesarian section finds a place. Amputations were performed using pressure, cautery, or boiling oil to control bleeding. You will see this practice adopted for many centuries even after the Christian era. Both perineal and suprapubic lithotomy were performed. Operations for hernia are described ; fractures and dislocations were classified and were well-treated. They used bamboo splints in their treatment. Ophthalmology had a high place. Cataract operations were done. Operations were divided into those of election and necessity. The most unpleasant practice of the despotic rulers of India of mutilating their enemies by cutting off their noses gave the

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Hindu surgeon the opportunity to exercise his ingenuity in the plastic restoration of human physiognomy. This operation is now well-known as the Indian operation for restoration of nose. This is done by transplanting a flap from the forehead. I have seen the results of this operation in Europe and no better method is found out yet. They were very good at plastic surgery, and had many instruments of the type that we use to-day. The exact date of this surgery is not known. Sushruta does not himself mention any dates The non-Indian scholars place it somewhere between 1000 B.C. and 750 A D. and majority of them favour a date of about 300 B.C. Their reasons are as follows: "Buddhism prevailed in India from 650 B.C. to 750 A.D. Christian love of pity and love represented by this religion is much more apt to foster medicine and surgery than the caste system and prejudice of the brahmin. Therefore thay say that this Buddhist period witnessed the greatest epoch of Hindu surgery." Sushruta refers to the brahmins in his work and therefore it is possible that it was written in the early part of this period when the brahmins still held some power. A third reason to place the acme of Hindu surgery to this period is the claim of Sanskrit scholars (non-Indian) that Sanskrit language is of an age not very long before the invasion of India by Alexander the Great (327 B.C.). I claim no pretentions for scholarship but when one ponders over their reasons certain fallacies become apparent. The caste system in India was first introduced for the efficiency of the community and division of labour. Nobody was supreme in the first days of caste. The brahmin became a menace only when the real idea of caste was forgotten. Sushruta in opening the abscess talks of invoking blessings from brahmins and medical men. These were their teachers. If this was written when Buddhism was predominant in the country no mention would have been made of the brahmin. I put down the age of the acme of the Hindu surgery to the acme of that great organisation of the Hindus, the caste system, that is when every caste worked for the others' good, when nobody was supreme and all equal, when caste existed for the benefit of all and not only for the benefit of the brahmin. The caste system lost its virtue when the brahmin became selfish and despotic and there was a necessity for a liberal teacher of religion and he appeared as Buddha. Under the fostering care of Buddhism Sushruta and others were able to compile their great works on Ayurveda. A science like Ayurveda contained in Sushurutha cannot be evolved in a day. It must have been the work of several men working for a very considerable time. So I shall be right in saying that Hindu surgery must have been very old, certainly older than the Buddhist period. The Hindus were so not parochial in their patriotism in those days and they assimilated a good thing wherever they found it. There is no doubt that there was intercourse between India and other countries such as Greece and Egypt. The mere fact that this Hindu does not mention of any Greek teaching show that the Hindu surgery reached its height long before the Greeks had anything to say about it.

The surgery of Babylonians, the Medes and Persians are all legendary. They are nothing compared to that of the Hindu surgery that we went through previously. The Persian Kings never trusted in their doctors. They always had a Egyptian or a Greek as their doctor. There is nothing very much to say about the surgery in China. What they had was not very much advanced. It becomes important only because the treatment by massage

is supposed to have been adopted into modern surgery from that of the Chinese. The treatment by massage was well-known amongst the ancient Hindus. There was no surgery amongst Hebrews. The Old Testament states that most of the diseases were punishments inflicted by divine power and removed only by propitiations of the deity by sacrifices and ceremonials. Next we come to Grecian surgery. It is important because the present surgery is supposed to be derived directly from that of the Greeks. But I shall be able to show this evening that the Greeks have borrowed a lot from Hindu surgeons and thus prove that the foundation of the present day surgery was laid in India by the Hindu surgeons.

The first mention of any surgery in Greece is to be found in Homeric writings (1000 B C.). He mentions Aesculapius not as a God but as a well-known physician.

There are no authentic records to be found till we come to the great Hippocrates (460 B.C.), the accepted father of the modern system of medicine. He was not a surgeon but a physician. In his oath he says ' I will not cut persons labouring under stone but leave these to the practitioners in this art.' But the knowledge Hippocrates possessed and wrote about was the culmination of many years of effort on the part of many men and that it was the means by which it came to be known to a more numerous clientele. The principal surgical operations he described had to do with wounds in head, fractures, dislocations, ulcers, and piles. He does not mention anything about abdominal surgery. Abdominal surgery is mentioned only very late as will be seen later.

Grecian surgeons seeing they could be more prosperous migrated to Rome. No advance was made there as Rome was decaying. When Alexander established Alexandria as his commercial capital the fountain-head of surgery passed again to the Orient. Alexander carried his tutor Aristotle with him to Alexandria. The great Alexandrian library was established. This transferred all the scientists to this place. Thus the Alexandrian school was founded. Aristotle was only an anatomist and only in an indirect way helped surgery.

A Roman author Cornelius Celsus (25 B. C.—45 A.D.) has left us 8 books in which he compiled the medical and surgical knowledge of the day. Many of the ailments are described as by Hippocrates but Celsus goes beyond Hippocrates in operative surgery describing operations for hernia, lithotomy cæsarian section, opening the abdomen, suturing insestines. It is in record that Alexander's scientists when he went to India with him got back a good deal of knowledge from the Hindu surgeons.

Till now we had been dealing with surgery before the Christian era. From the dawn of the Christian Era to the downfall of the Roman Empire (400 A. D.) there was nothing of note. Rome was decaying. Licentiousness of both rulers and people, luxury and sloth were taking their toll. Science and art were on the vane. The advice of the physician and surgeon as to sanitary matters were neglected and the mystical and magical elements fostered by the priests gained ascendency. Alchemy, magic and astrology ruled. Added to this came plagues and the rout of medicine and surgery was complete in Europe.

In the Byzantine (Second Roman Empire) period there were great compilations, though there were no original surgeons. Hospitals and almhouses and other institutions for the sick and the poor were maintained and these became

great medical schools in the middle ages. Christianity now met with a mighty foe in Muhammadanism. The guidance of the Christian Church fell into the hands of a few who were jealous of power. The arts and sciences were not taught and even many of the clergy could not read or write. The Church ruled that the surgery should not be practised by their monks. Therefore what surgery there was during the greater part of the middle ages in Europe was practised by quacks and charlatans and there is no record about them. Again the task of fostering surgery passed across the Mediterranean into the Orient and in the 9th century the Arabian School of Medicine became dominant and held supremacy for four centuries. Though called Arabian it was by no means the Arabian alone who grasped the remnants of Grecian surgery and kept it alive for posterity. Almost all of the Oriental peoples had a hand in this work of safeguarding. There was not much progress. The high class scholar in surgery could do no work with his hands but must act simply as a director and adviser in operations. There were great compilers and these books give an idea of the operations that were done then and these do not go beyond those described by Sushruta many centuries ago. The great Arbian surgeon, Albucasis perfected the cautery which was used for almost everything in surgery and even replaced the knife just as the electric cautery and diathermic knife are attempting to do to-day. Albucasis is supposed to have been the first surgeon who employed the visual methods of teaching, using carefully drawn illustrations, though it is in records that the Hindu surgeon had been teaching surgery by using all sorts of models. The Arabian School flourished till about 1390 A.D. and then the Arabian surgery and secondarily the Grecian was transplanted into the continent of Europe. The Muslim culture and learning passed into Europe through different channels.

The School of Mont Pellier became famous. To it came the Jews who furnished the translations of the Arabian works. One of these, Jacob Ben Mecar even became the rector of the Faculty. This appointment affords an outstanding example of toleration even in this period of religious bigotry. This institution furnished many great surgeons of whom Guy de Chandilac, a Frenchman stands in the same relation to morden surgery as Hippocrates does to modern medicine.

At the beginning of the 14th century many universities were established in different parts of Europe, Bologna and Padua in Italy, Paris and Mont Pellier in France, and Oxford in England. I wish here to quote a very important sentence from the famous work of Guy de Chandilac, father of modern surgery, describing the sects of surgeons of his day,—after describing four sects, "the fifth sect is of women and many fools who refer the sick of all diseases to the Saints solely saying that God has given me that which pleased him and God will cure me when it pleases him to do so, blessed be the name of the Lord. Amen." This sentence is the most illuminating in Guy's surgery. It shows that the dominant influence of the Church and priests in surgery is gone and that a more rational surgery has come to stay in Europe. This surgery progressed steadily. The study of human anatomy was another factor which helped progress in surgery. The discovery of printing by free moveable types was also instrumental in the progress of surgery to a great deal. By it the knowledge of the ancients were ready at hand for a small price for any one who could read. Another important event which tended to the progress of surgery was the use of gunpowder in war. The ever-present European wars and the constant discovery of newer

methods of carrying on warfare has thus had a tremendous influence on the growth of surgery. Most complicated wounds had to be treated and amputations had to be performed. From now onwards in the 15th century the surgery progressed in all of the countries at a steady pace. The universities produced the learned surgeons or master surgeons and there were very few of them. There were also others consisting of all sorts and conditions of people who practised surgery. These, later, were called irregulars by the master surgeons. They were numerous. There was a constant fight between qualified university men and quacks. It is not necessary to have to enter into the details of this fight. Suffice it to say that the fight ended in a complete victory for the real surgeon. Quacks and barber surgeons are a thing of the past in Europe and America. I shall just quote a few sentences from a 16th century surgeon just to show at what heat this fight was carried on; incidentally also learning the high spots of printable infective found in the English language of the day. John Barrister dedicating his book to all true surgeons goes on to characterise the quack surgeons by saying: "As for you, O aye chaffe of the earth! ye sting of the godly, ye limps of hell and children of warth you, (I say) that under pretense of the sacred art of medicine devour the sheep of god's pasture, flea the labourers in his harvest, and deny your lord the fruits of the vineyard. . . . and ends: and I (in these my labours) from the depth of heart denounce you hoping assuredly that from none of the flowers of this garden any of you shall take opportunity to suckle that which may maintain the infection of your pestilent wretchedness hereafter."

The 16th century saw the first great advance in two other sister sciences, *i. e.*, physiology and anatomy. The problem of circulation of blood was solved in the surgical laboratories at Padua though final proof was left to be demonstrated by the great William Harvey in the beginning of the 17th century. Harvey started his medical practice on an entirely new line of thought, *viz.*, reasoning and experimentation. Thus a new science based upon critical observation was born. Harvey was not able to demonstrate the capillary circulation He left that to be discovered by Malpighi a century later. In the meanwhile other sciences also improved. The microscope was invented or re invented and used to the advancement of knowledge. I say re-invented because the ancients must have known of some good magnifiers as without them precious stones could not be cut nicely and accurately as they have done in their ages. Even with all this, surgery did not advance very much. The surgeons were under the domination and direction of the physicians. The better surgeons were serving in the armies and navies and so had little time to devote to the advancement of the science. The operative surgery of civil life were left to the itinerant quack and he flourished. So for the next two centuries the surgical science was in a sorry state. In the middle of the 17th century England produced one of the greatest of clinical surgeons of all times, Percival Pott. He correlated the physical findings in the patient with the findings at the post-mortem and his contributions to surgical literature were clear-cut with lucid descriptions illustrated by beautifully made and accurate engravings. It was he who first taught the treatment of wounds on a painless plan and he lived to see his rational and humane method universally adopted. The next great man in surgery was John Hunter. He recognised for the first time the relation between the factor causing the disease and the resistance of the body mechanism which combats the injurious force.

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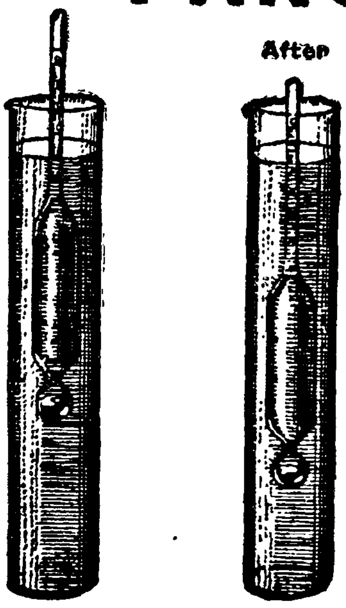

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Surgery owes a great debt to his anatomical experimental surgery and physiological work. The object of surgeons up to now, at least after the Christian era was to study symptoms and cure it if possible. Something was tried and if successful it was used. If it failed it was discarded. No effort was made to find out the underlying cause by which the body became sick or was healed. He was also very keen to adopt anything from other sciences and use it for the advancement of surgery. Following the lines laid down by Hunter the surgeons began to follow the advances made in other branches of science and adopt from them things which could be applied to the betterment of surgery. The great advance made in surgery in these days were in great part due to discoveries in the fields of Chemistry and Physics. Still there were two great factors which were hampering surgical operations. One was lack of proper anaesthetic. The second was the prevalence of infection so that all wounds suppurated. The search for a non-lethal anaesthetic goes back to the dawn of surgery. The first anaesthetic tried was inhalation of the vapour of Indian hemp. In the middle ages opium formed an important ingredient of anaesthetic drugs used. Various other methods were also employed. Application of cold, intoxication with alcohol, pressure on the nerves and a clout on the head. We owe to the American surgeons the introduction of ether as an anaesthetic (1844). In 1847 Sir James Simpson, an Edinburgh surgeon, introduced chloroform which proved to be very satisfactory and is still used in many cases. Pain having been subdued the next drawback was infection. The surgical mind applied itself to find the cause of infection. A London surgeon first recognised that the cause of infection came from outside of the body rather than the contained humors.

Oliver Wendel Holmes, Professor of Anatomy at Harvard University, was the next who laid stress on the outside agent as the cause of infection and that it can be carried by doctors and nurses. Almost at the same time Semmellweiss of Austria also came to the same conclusion and by washing his hands in chlorine water before each examination and delivery reduced maternal mortality from 12 to 3 per cent in two months. There was a good deal of opposition to this idea from conservative surgeons. In the meanwhile laboratory workers were not idle. The compound microscope with its high power of magnification became a reality. The process of fermentation and putrefaction of food was studied and the science of bacteriology came into existence. Pasteur was the first who proved that there was a specific organism for each particular fermentation, and thus generalised that each disease has a particular organism as the cause. Lister not only was the first to use antiseptic spray in his operation theatre but also immersed his ligatory instruments and sponges in carbolic acid. He also washed his hands in the same solution. This is the beginning of the antiseptic surgery. Pasteur and Lister will always remain as the two great men in operative surgery as without their discoveries development of surgery would have been impossible. To them belong the credit of recognising facts well-known for years To them belong the credit of applying their knowledge for the benefit of mankind.

The two great drawbacks to the progress of surgery having been removed the present day operative surgery which can be said practically to be perfect and without any danger to the patient was evolved. Only one doubtful factor remains the surgeon and his assistants. This I am sorry to say will remain to the end. The really perfect are not of this earth.

At the beginning of the world war operations were performed for any and every disease especially with regard to fractures. The tremendous amount of material afforded by the wounded in the war was first treated by operations. This was found to be insufficient and even dangerous. Surgeons fell back to the methods of the ancients Traction and extension apparatus of the ancients though in a more modern form were re-discovered and applied for the treatment of injuries. The fever to operate on fractures diminished and a more rational and physiological therapy took its place. The same thing occurred in the treatment of wounds. The surgeons were looking for a strong antiseptic which would prevent infecrion and heal all wounds. Nothing was left untried. The age old truth that the body must subdue infective process, otherwise healing would not take place, forced its way into the surgical mind and a rational treatment was initiated. Again returning to the methods of the ancients added to make the result more beneficial. So much we owe to the great world war. I am sure none of us want another cataclysm like that, however beneficial it may be. Before I conclude I might as well mention some of the great advances and discoveries in other scientific lines which has been grasped by the surgeons and used for the benefit of surgery. Such are x-ray, radium, various forms of electrically lighted appliances and operative instruments. This in short is the long road that surgery has taken to reach its enviable position in medical science to deserve the eulogism that Sushruta gave it ages ago.

"Search while thou wilt, and let thy reason go.
To ransom truth, even to th' abyss below;
Rally the scttered causes; and that line
Which nature twists, be able to untwine."

Sir Thomas Browne,
Religio Medica.

Deafness—I.*

By Dr. M. Sanjiva Rao, M.B., B.S.,
Hony. Asst. Surgeon, E. N. T. Dept., General Hospital, Madras.

The sensory machanism of hearing consists of a (1) Perceptive portion—concerned with the perception of the auditory stimulus and (2) Conductive portion—a medium through which the stimulus is conducted from its source, to the perceptive portion. The perceptive portion consists of the Cochlear nerve and its peripheral end-organ, Organ of Corti, while the conductive portion consists of the external and middle-ears.

The junction of the conductive and perceptive portion is in the Cochlea. The Cochlea is a tapering bony tube, hollowed out in the substance of the temporal bone, filled with fluid—the Cochlear fluid—and wound into a spiral round a central bony pillar called the modiolus. The whole length of the Cochlea is divided into two compartments by a specialised membrane called the Basilar membrane on which is spread out the sensory neuro—epithelium called the organ of Corti—the end organ of the Cochlear nerve.

On the conductive side, the two compartments of the Cochlea communicate with the middle-ear, through two windows one above the other—the oval and the round window, situated on its outer wall. The oval window is closed by the foot-piece of the stapes or stirrup, which moves in and out like a piston in the barrel of a syringe. The round window is closed by a delicate membrane resembling the tympanic membrane.

The middle-ear is closed from the external canal by the tympanic membrane and contains besides other things, air, which is kept at atmospheric

* Read before the South Indian Medical Union, Madras.

pressure by the Eustachian tube, connecting it with the nasopharynx. The Eustachian orifice in the nasopharynx, normally closed, is opened by the action of Tensor Palati, while swallowing. The ossicular chain—malleus, incus and stapes—is attached laterally by the handle of the malleus to the tympanic membrane, while medially the foot piece of the stapes fits into the oval window. Two tiny antagonistic muscles, Tensor tympani and stapedius are attached to the lateral and medial ends of the ossicular chain.

Sound-waves impinging on the drum membrane force it into sympathetic vibration, which in turn are conducted through the ossicular chain and foot piece of stapes closing the oval window to the Cochlear fluid, and are thus converted into fluid vibrations The Basilar membrane floating in this fluid is composed of fibres progressively increasing in length, but diminishing in tension like the strings of a piano. Just as when a note is sung in part of an open piano, the particular string to which it is attuned responds, similarly, the fibres of the Basilar membrane, respond to the fundamental notes of the sound-wave, produced in the Cochlear fluid. The vibrations stimulate the organ of Corti, resting upon it, resulting in corresponding auditory nerve impulses, being transmitted up the Cochlear nerve to the Brain. This is the normal way the sounds are conducted to the Cochlea and is known as hearing by *air-conduction.* Sounds can be conducted by *bone-conduction* too. When the stem of a sounding tuning fork is pressed against the forehead, the sound is heard by bone-conduction. In this the vibrations of the fork are conducted directly through the bone of the skull to the Cochlear fluid. The manner of perception in both cases is however the same. In passing it may be mentioned, that some observers hold that vibrations of the drumhead are transmitted through the air in the tympanum, to the membrane of the rcund window or promontary and thus stimulate the Cochlear fluid. They hold that function of the ossicular chain with its two muscles is of an accommodative nature to regulate intralabrynthine pressure to produce the best condition for hearing—thus delegating a function similar to accommodation in the eye by the ciliary muscle and lens.

II. Aetiology.

Deafness is a symptom, which occurs either alone, or in combination with other signs and symptoms, in the course of various diseases of the hearing organ. It is clinically divided into.

(1) *Conductive deafness.*—Lesions of conductive mechanism, *e.g.*, diseases of external and middle-ear.

(2) *Perceptive or nerve deafness.*—Lesions of Labarynth, auditory nerve and its connections.

Conductive Deafness.

External ear.—Any condition which obstructs or narrows the lumen of external canal, *e.g.*, wax or foreign bodies or stenosis of the Meatus, congenital or acquired.

Middle-ear cleft.

A—Predisposing causes :—either

(*a*) Acute Rhino-pharyngitis—simple or associated, with specific fevers, Influenza, Diphtheria, Measles, etc.,

(*b*) Chronic Rhino-pharyngitis—associated with Adenoids, Tonsillitis, Sinusitis, Snuffing, etc.

B—Actual Lesions.

(*a*) Eustachian obstruction.

i. Extrinsic—when orifice is obstructed by tumours, etc.

ii. Intrinsic—acute or Chronic Salpingitis.

(*b*) Otitis Media.

1. Acute < Catarrhal / Suppurative.

2. Chronic < Catarrhal / Suppurative.

3. Oto-Sclerosis.

Preceptive or nerve deafness.

A—*Secondary.* — Labarynthitis, etc., secondary to middle-ear suppuration.

B—*Primary.*

(1) *Congenital.*—Associated with malformations of the labarynth, or hereditary and endemic associated with goitre, cretinism and poor mental development.

(2) *Senile.*—Probably atrophy of Corti's organ or ossification of Basilar membrane occurring as a senile change.

(3) *Acute specific fevers.*—Cerebrospinal meningitis, Influenza, Typhoid, Mumps, Diphtheria, Small-pox, Measles, acute Rheumatism, acute Osteomyelitis, etc., *Focal sepsis.*

(4) *Constitutional Diseases.*—Syphilis, congenital or acquired, Pernicious anaemia, Leukemia, Diabetes, etc.

(5) *Nervous Diseases.*—Locomotor Ataxy, G. P. I., etc.

(6) *Toxic Causes.*—Quinine, Salicylates, Tobacco, Alcohol, etc.

(7) *Occupational.*— Boiler-workers, Caisson-workers, etc.

(8) *Tumours.*—Fibroma, Glioma, Neuroma or Sarcoma and Cancer.

(9) *Trauma.*—Concussion or Fractures of Base of Skull.

(10) *Central Nervous Lesions.*—Gummata, Hæmorrhage, etc.

(11) *Functional.*—Hysteria.

III. Diagnosis of Deafness.

This necessarily means the diagnosis of various lesion or lesions causing deafness, their predisposing causes, the pathological changes present, etc. The routine investigation in a case of deafness consists of :—

(1) Functional examination of the auditory apparatus.

(2) Dark room examination of the Ear, Nose and Throat.

(3) Any other special or general examination.

The routine dark room examination of the ear, nose and throat, appearances of the tympanic membrane in health and diseases, and diagnosis of conditions like septic tonsils, adenoids, rhinitis, etc., is a familiar subject, and I shall refer in detail only to functional examination of hearing.

For ordinary clinical purposes a preliminary examination of hearing is first made with a watch or the voice, used as a whisper, conversation voice or loud voice. One ear is tested at a time, the other being tightly occluded by the finger or Barany's clock-work should be used in cases when there is marked disparity of hearing between the two ears. In passing it may be mentioned that in conductive deafness, the hearing loss is never so profound as to make a man stone-deaf. There is always some hearing left. In profound loss of hearing nerve involvement is a certainty.

Next, the three classical tuning fork tests are performed and results noted, *e.g.*, Swabach's, Weber's and Rinne's

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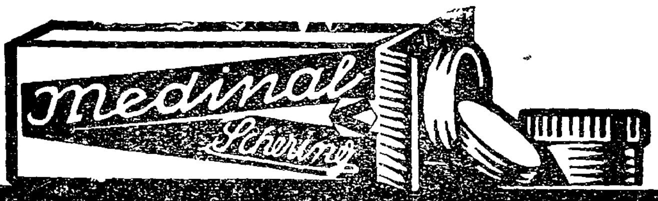

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tests. These tuning fork tests depend on the following observations :—

(1) If the stem of a sounding tuning fork is pressed against the forehead or mastoid of a normal subject, the sound is heard by bone-conduction.

(2) If after the fork has ceased to be heard, it is held in front of the ear, it can still be heard, and that by air-conduction. This also shows that in a normal person, duration by bone-conduction is shorter than by air-conduction, or shortly A C > B C.

(3) If while the sounding tuning fork is on the centre of the forehead, one ear is closed by the finger, the sound is heard louder on the "closed side" and for a longer time By closing the ear, an artificial lesion of the sound conducting mechanism is produced, and we find that the duration of bone-conduction is increased, while air conduction proportionately diminishes. This phenomena is common to all conductive lesions, middle or external ear.

Swabach's test consists in comparing, patient's bone-conduction with that of the examiner's by the help of a tuning fork. Bone-conduction is increased in conductive deafness and diminished in nerve deafness.

Weber's test, which is useful in unilateral deafness, or when one ear is more markedly affected than the other, consists in comparing the bone-conduction of the ears, the stem of the tuning fork being placed in the centre of the forehead. Bone-conduction is better on the affected side in conductive deafness, while in nerve deafness it is poorer.

Rinne's Test.—In this duration of bone-conduction and air-conduction of affected ear are compared, by holding the tuning fork against the mastoid and ear respectively. Normally air-conduction is greater than bone-conduction or A C > B C or Rinne positive. In conductive deafness B C > A C or Rinne is negative. In nerve deafness A C > B C but both are diminished or Rinne pathologically positive. In mixed deafness B C > A C but both are diminished.

No satisfactory explanation, as to why Rinne's test is positive in health and negative in conductive deafness, has been given, but the probable explanation is this :—

In normal bone-conduction a portion of the sound vibrations is reflected out through the middle and external ears, whereas in conductive deafness this outward loss is prevented, increasing bone-conduction and proportionately diminishing air-conduction.

Finally the upper and lower limits of audition are determined by a series of tuning forks increasing in frequency and high notes, by Galton's whistle or monochord. The lowest limit of hearing is 16 double vibrations per second and highest 19,000 or so. In conductive deafness the low notes are poorly heard, whereas in nerve deafness the high notes are not well heard.

These tests are followed up by an examination of the ear, nose and throat and any other necessary data obtained *e.g*, history, general health, etc., all of which collectively enable us to diagnose the individual diseases, concerned in the deafness, the predisposing causes, the pathological changes, etc.

Finally I wish to emphasise that a diagnosis of deafness to be complete must include the following :—

(1) Determining as nearly as possible the amount of hearing loss.

(2) Locating the lesion or lesions responsible for the hearing loss.

(3) Where more than one lesion is responsible, whether they are independent of one another or one is secondary to the other.

(4) Where more than one lesion is present and independent of each other, determining which was the first to develop and which the last.

(5) The Pathological changes that have occurred since the commencement of the disease or diseases and how far they are amenable to treatment.

(6) Predisposing causes if any, single or multiple.

(7) Whether the predisposing causes are still active or not.

(8) Whether predisposing causes are removable or not.

(9) If predisposing causes are not removable, whether their viciousness can be inhibited at least.

(10) In the event of no treatment will the patient continue to lose more hearing or will the loss remain fixed.

After taking into account every factor so far cited, and perhaps others not yet cited one is able to make something like a precise diagnosis, outline an appropriate form of treatment and foretell something about the probable outcome. Anything that takes in less must necessarily use proportionately in the fullness of diagnosis.

Inflation of the Middle-ear.

There is yet another investigation to be described namely the effect of inflation of the middle-ear. It is of great value from the diagnostic, prognostic and therapeutic points of view. The middle-ear can be inflated by (1) Valsalva's experiment, (2) Politzer's bag, (3) Eustachian catheterisation.

(1) *Valsalva's experiment* which consist in making a forced expiration with the mouth and nostrils tightly occluded, is the least satisfactory method.

(2) *Politzerisation.*—The nozzle of the bag is inserted into one nostril and then both the nostrils are tightly occluded, and the patient is asked to blow out his cheeks, and then the bag is compressed; part of the air thus driven in will enter the middle-ear unless it is very much occluded. In case only one ear is to be treated, its action on the other ear can be prevented by tightly compressing the external meatus by tragal pressure. In children the bag can be compressed in the act of crying.

(3) *Eustachian catheterisation.*—The corresponding nasal vestibule is opened out by a Thudichum's speculum and with reflected light a preliminary examination is made to see that the passage is free from any serious spurs or septal deviations or any septic condition. After this the eustachian catheter is passed along the floor of the nose and by certain manouvres, its curved end is made to rest against the eustachian orifice, and the middle-ear is inflated by fitting a Politzer's bag into the outer end of the catheter, and squeezing the bag. An auscultatory tube connects the examiner's ear with the affected ear to observe the auscultatory sounds, produced in the middle-ear during inflation. If the eustachian tube is patent a definite blowing sound is heard. In eustachian obstruction the sound is proportionately less distinct. If there is fluid in the tympanum faint crackling rubs are heard. If the drum head is perforated the sound appears much closer, as if air has passed directly into the examiner's ear, while a small perforation may produce a whistling sound.

After inflation of the middle-ear the hearing tests are again repeated and any

improvement recorded. The prognosis chiefly depends on the amount of improvement produced by successful inflation and the duration of such improvement.

As to the respective merits of politzerisation and catheterisation, the former is easier to perform, and more pleasant to the patient, and is about the only method practicable in children, and its action on the unaffected ear can be prevented by closing that ear tightly by tragal pressure. When however obstruction is more marked, inflation may be possible only by the catheter, which has also the advantage of the auscultatory phenmena being more easily observed.

IV. Pathology of deafness.

By the term pathology of deafness, I mean the various gross or minute changes which interfere with the conduction or perception of sound, in the various lesions of the hearing organ, previously enumerated.

In the *External Ear*, conditions which narrow the lumen of the canal, produce varying degrees of deafness, by interfering with the intensity of the sound conveyed to the tympanic membrane.

In *Eustachian obstruction* air is imprisoned within the tympanum and slowly absorbed, resulting in lowered intra-tympanic pressure. The atmospheric pressure outside drives the drum head with the ossicular chain inwards. This process interferes with conductivity of the middle-ear by restricting the amplitude of vibrations, making difficult the transmission of especially the low tones.

In cases of *long standing catarrh of the Tube and Tympanum,* the indrawing of the drum head becomes more permanent by adhesions binding it down to the promontary or the membrane becomes relaxed and atrophied, the eustachian and tympanic mucosa become thickened and Tendon of Tensor Tympani permanently shortened.

In *actute otitis media* deafness is due to the presence of fluid and swollen mucosa which damp the sound vibrations. In favourable cases or under effective treatment, with the subsidence of inflammation and resolution of these changes hearing is completely restored. On the other hand in

Sub-acute cases or delayed resolution often associated with imperfect drainage or weak vitality after acute specific fevers, the perforation tends to become chronic by thickening of its edges and ingrowth of external epithelium, adhesions begin to form binding the drum head or the margins of the perforation to the promontary or between the foot piece of the stapes and margin of the oval window, etc. The highest degrees of conductive deafness are associated with fibrosis of the membranes of the oval and round windows and with fibrosis or bony ankylosis of the stapes.

In *Chronic Otorrhea* deafness is associated with the presence of swollen pulpy granulations, or cholesteatomatous masses filling the oval and round windows or polypi extending out of the canal.

The influence of *perforations* of the drum head on hearing is very doubtful. It is a matter of common observation that large perforations are often compatible with good hearing if unaccompanied by any adhesions.

But even in such uncomplicated cases, careful functional examination will in the majority of cases reveal, that while the hearing for most notes is uneffected, yet the very low notes are poorly heard. This may be a trivial matter in ordinary life, but may be a serious

handicap in certain professions. In the medical profession, for example, the hearing of the sounds of the respiration or of the heart, which are for the most part composed of low notes will be lost and will seriously handicap the professional work.

A feature common to all forms of middle-ear deafness is that hearing for low notes is comparatively more affected than for high notes. This has not been satisfactorily explained, but probably depends on the following accoustic principle :—Other things being constant, to produce a given amount of energy, a low pitched sound should have a larger amplitude of vibration than a high pitched one. In middle ear disease this amplitude is restricted by presence of adhesions, etc. Therefore to produce the minimum energy for perception of a low pitched sound, the larger amplitude necessary is not easily obtained on account of the adhesions. On the other hand in high pitched tones, the small amplitude necessary to supply the minimal energy is more easily obtained.

It is not possible, however, to ascertain in every case the exact pathological lesions producing deafness probably due to the fact that we are not able by inspection to have a complete view of the structures involved, particularly those in the region of the oval and round windows. In all probability the chief factor which determines the extent of deafness is the mobility of the stapes and the membrane of the round and oval windows.

Review.

Lodhra Press Calendar for 1931 is issued in one day tear off sheets. The figures are very bold. This calendar would be found very useful not only in office rooms but in large halls where one such would be adequate. It is priced at Rs. 2 each but may be obtained at a concession rate of Re. 1 to all who mention the Bulletin.

Diaries. In these days when one's sanctum is invaded by the distributors of samples and literature it is a welcome change to recieve something more useful in the form of diaries and engagement books.

Those issued by the Bengal Chemical and Pharmaceutical Works, Ltd., and Bengal Immunity Co. are both in the form of pocket books. Besides the mention of their individual specialities they contain useful matter of daily reference to the busy medical Practitioner.

That issued by the Nestles Milk Co. is in the nature of a desk pad and is full of useful information on the Vitamines. All the above publications may be had on application to the respective Companies.

An up-to-date electric institute with provision for X-ray examination and treatment, Diathermy, medical and surgical and ultra-Violet therapy, is shortly to be installed in Kumbakonam, Tanjore District. It will be available to the Doctors and public by the third week of February, 1931.